Remarks

Claims 1 through 13 remain pending in the application.

The Office Action objects to Claim because it is missing a period. Appropriate correction is made.

The Office Action rejects Claims 1 through 13 as directed to non-statutory subject matter under the assertion that Claims 1 through 13 cite a process, device and medium for transforming data in accordance with a mathematical algorithm without disclosing a practical/physical application. The Office Action further asserts that claims 1 through 6, 12 and 13 are not directed to a machine or apparatus and device and Claims 7 and 9 are not directed to any specific hardware component to realize the implementation and are thus considered as software per se. Claims 1 and 8 are amended to apply to transformation of a digital signal representing audio, video or an image. Therefore, claimed inventions in claims 1 and 8 as amended produce tangible results, and the subject matter of the amended claims may be considered statutory subject matter. Accordingly, the Applicant respectfully requests withdrawal under 35 U.S.C. §101.

With regard to claims 7, 9, 10 and 11, the claimed inventions are directed to devices and computer readable media that decompose the transformation matrix, decompose the rotation and auxiliary matrix, determine the transforming element and output the determined measure which represents the transforming element for a given transformation function. Therefore, claimed inventions in the claims as amended produce tangible results, and the subject matter of the amended claims may be considered

statutory subject matter. Accordingly, the Applicant respectfully requests withdrawal under 35 U.S.C. §101.

The Office Action rejects Claims 1 through 13 as anticipated by Geiger, et al., Audio Coding Bases on Integer Transform, Audio Engineering Society Convention Paper, 5471 (Sep. 2001) under the assertion that Geiger discloses a process for determining a transforming element for a given transformation function having a transformation matrix and corresponds to a transformation of a digital signal from the time domain into the frequency domain or vice versa wherein the transformation matrix is decomposed into a rotation matrix and an auxiliary matrix which, when multiplied with itself, equals a permutation matrix multiplied with an integer diagonal matrix. The Office Action further asserts that the rotation matrix and the auxiliary matrix are decomposed into a plurality of lifting matrices and the transforming element is determined to comprise a plurality of lifting stages which correspond to the lifting matrices.

The Geiger reference is not prior art under 35 U.S.C. §102(e). Geiger is neither an application filed by another in the U.S. before the invention by the applicant, nor is it a patent granted on an application for a patent by another filed in the U.S. before the invention thereof by the applicant for patent. Thus Geiger is not either of these types of prior art references, the rejection under 102(e) is inappropriate. Therefore, applicant requests withdrawal of this rejection and allowance of the claims.

Even assuming that the cited reference is appropriate prior art, the cited reference does not disclose all limitations of

the claimed invention. Geiger does not disclose an auxiliary matrix which, when multiplied with itself, equals a permutation matrix multiplied with an integer diagonal matrix. Instead, Ralf discloses the Givens rotation of $\begin{pmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{pmatrix}$. This Givens rotation, when multiplied by itself, is equal to the following matrix A: $\begin{pmatrix} \cos^2\alpha - \sin^2\alpha & -2\sin\alpha\cos\alpha \\ 2\sin\alpha\cos\alpha & \cos^2\alpha - \sin^2\alpha \end{pmatrix}$. If α is a multiple of pi/2, then matrix A would become either $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$, an identity matrix, or $\begin{pmatrix} -1 & 0 \\ 0 & -1 \end{pmatrix}$, a negative identity matrix.

On the other hand, Applicant's process claims that the transformation matrix is decomposed into a rotation matrix and an auxiliary matrix which, when multiplied by itself, equals a permutation matrix multiplied with an integer diagonal matrix. A permutation matrix is used to produce a permutation in the rows or columns of the other matrix when it is multiplied with another matrix. Neither the identity matrix nor the negative identity matrix of Geiger is considered a permutation matrix because the identity matrix or the negative identity matrix do not permute. Thus, because the identity matrix or the negative identity matrix cannot be considered a permutation matrix Ralf does not disclose an auxiliary matrix which, when multiplied with itself, equals a permutation matrix multiples with an integer diagonal matrix. Therefore, Geiger does not anticipate the applicant's claimed invention.

Claims 2 through 6 depend from Claim 1 and for the reasons discussed above, Geiger does anticipate these claims.

The Office Action rejects Claim 8 as anticipated by Geiger under the assertion that Geiger discloses a method of transforming a digital signal from the time domain into the frequency domain or vice versa using a transforming element wherein the transforming element corresponds to a given transformation function, which transformation function includes a transformation matrix wherein the transforming element is determined by a process including decomposing the transformation matrix into a rotation matrix and an auxiliary matrix which, when multiplied with itself, equals a permutation matrix multiplied with an integer diagonal matrix. The Office Action further asserts that Geiger discloses decomposing the rotation matrix and the auxiliary matrix each into a plurality of lifting matrices and determining the transforming element to comprise of a plurality of lifting stages which correspond to the lifting matrices, each lifting stage including the process of sub-blocks of the digital signal by an auxiliary transformation and by a rounding unit.

As discussed above, Geiger does not disclose an auxiliary matrix which, when multiplied with itself, equals a permutation matrix multiples with an integer diagonal matrix. Geiger only discloses an identity matrix or a negative identity matrix and not a permutation matrix. Therefore, Geiger does not anticipate the applicant's claimed invention.

The Office Action rejects Claims 9 through 13 for the same reasons Claims 1, 3, 4 and 8 were rejected. As argued above, Geiger does not disclose the claimed invention and for these same reasons, Geiger does not anticipate Claims 10 through 13.

Conclusion

This response has addressed all of the Examiner's grounds for rejection. The rejections based on prior art have been traversed. Reconsideration of the rejections and allowance of the claims is requested.

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